

No.	Description	Date
1	ADDENDUM #1	05/12/2010

## Loudoun Youth Shelter

## Additions & Renovations

Window View Court  
Leesburg

Sheet Title:

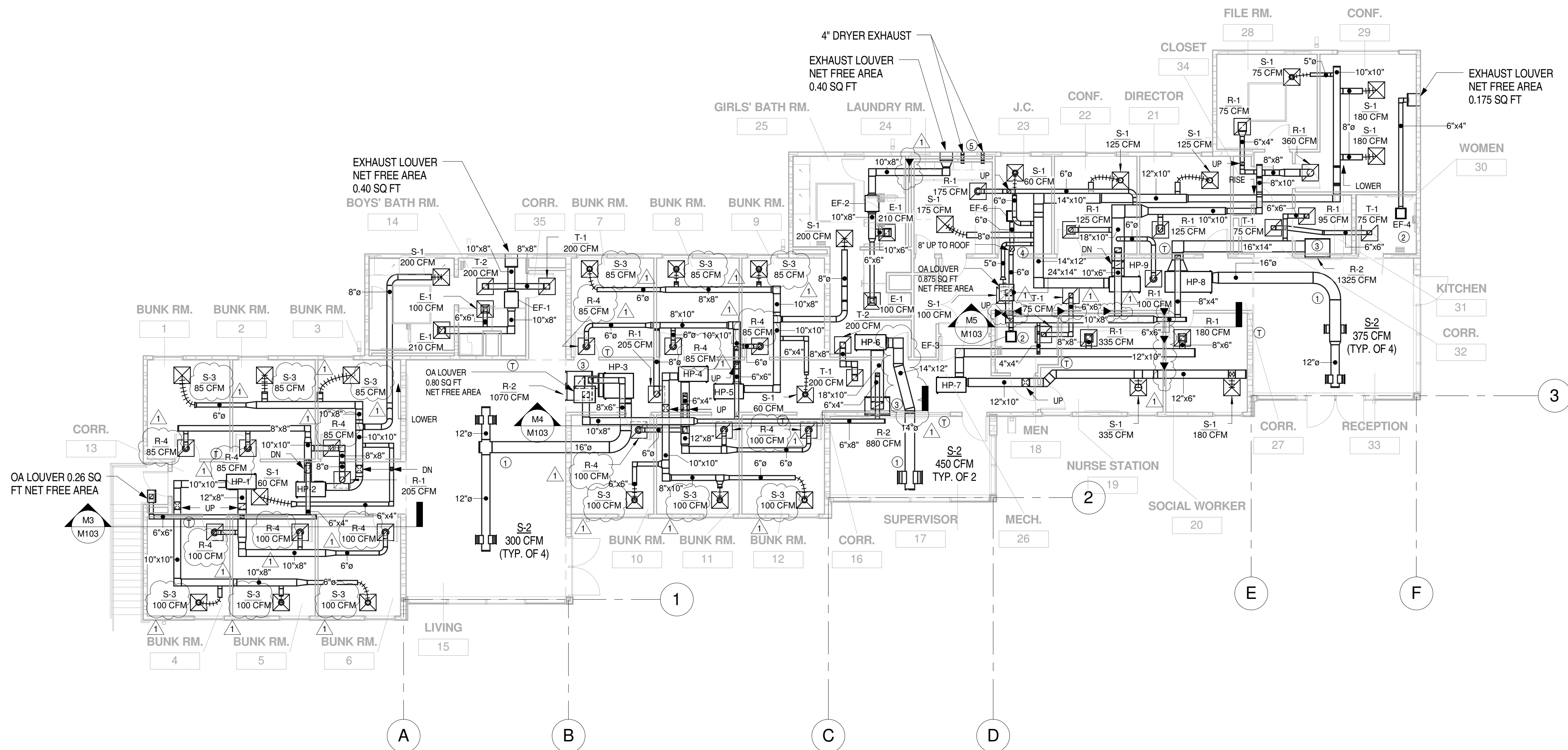
### MECHANICAL FLOOR PLANS

Drawing Number:

**M101**

Issue Date: 4/09/2010

Drawn By: MZ Project Number:  
Checked By: KC Project Number:



#### DRAWING NOTES:

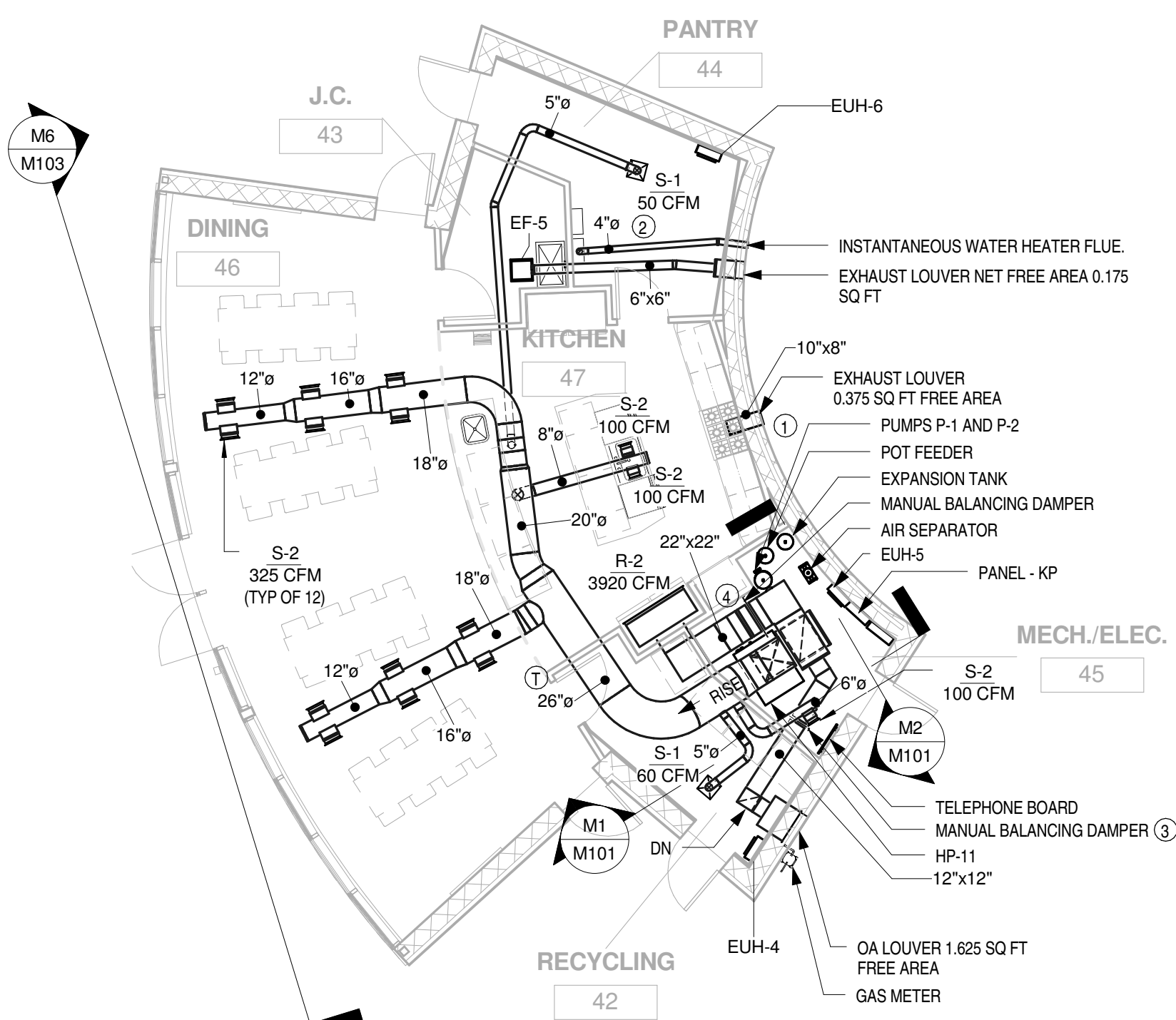
- 1) INSTALL BALANCING DAMPERS AND BACKDRAFT DAMPER IN ALL OUTSIDE AIR BRANCH LINES TO EACH HEAT PUMP.
- 2) PROVIDE 2' CLEARANCE ON EACH SIDE OF WATER SOURCE HEAT PUMPS PER MANUFACTURER'S INSTRUCTION.
- 3) SUPPLY DIFFUSERS S-2 TO BE SPIRAL DUCT-MOUNTED GRILLES.
- 4) BOTTOM OF RETURN GRILLES, R-2, TO BE INSTALLED 8'-6" AFF.
- 5) RETURN DUCT SHALL NOT BE INSULATED.
- 6) SEE ARCHITECTURAL PLANS FOR ACTUAL OUTSIDE AIR LOUVER SIZES

#### KEY NOTES:

- 1) PROVIDE ROUND EXPOSED SUPPLY DUCTWORK INSULATED WITH 1" INER. PAINT EXPOSED DUCT TO MATCH CEILING.
- 2) CONTROL EXHAUST FANS WITH WALL MOUNTED TOGGLE SWITCH.
- 3) PROVIDE 1" THICK DUCT LINER IN RETURN PLENUM AND RETURN DUCTWORK BACK TO UNIT.
- 4) PROVIDE AURA VENTILATOR CAP, MODEL AV-8, AT EXHAUST TERMINATION AT ROOF. INSTALL VENTILATOR CAP TO MATCH PITCH OF ROOF.
- 5) PROVIDE 4" RIGID METAL DUCT FOR EACH DRYER. TERMINATE WITH DRYER VENT HOOD WALL CAP. INSTALL PER MANUFACTURER'S INSTRUCTIONS

### BUILDING 1 - LEVEL 1 FLOOR PLAN MECH

2  
M101 1/8" = 1'-0"



#### DRAWING NOTES:

- 1) SUPPLY DIFFUSERS S-2 LOCATED IN THE DINING ROOM TO BE SPIRAL DUCT MOUNTED GRILLES
- 2) BOTTOM OF WALL RETURN GRILLE LOCATED IN DINING ROOM TO BE INSTALLED 8'-6" AFF.
- 3) LINE ALL SUPPLY ROUND EXPOSED DUCTWORK WITH 1" LINER. PAINT EXPOSED DUCT TO MATCH CEILING.
- 4) RETURN DUCTWORK SHALL NOT BE INSULATED.
- 5) PROVIDE 2' CLEARANCE ON THREE SIDES OF WATER SOURCE HEAT PUMP, HP-11, PER MANUFACTURER'S INSTRUCTIONS

#### KEY NOTES:

- 1) CONNECT TO VIKING RANGE/ HOOD FAN ASSEMBLY.
- 2) PROVIDE 5" CONCENTRIC FLUE PIPING PER MANUFACTURER'S INSTRUCTIONS. FLUE PIPING TO BE POLYPROPYLENE INSIDE AND PVC OUTSIDE.
- 3) PROVIDE BACKDRAFT DAMPER AND MANUAL BALANCING DAMPER.
- 4) PROVIDE DUCT SMOKE DETECTOR IN RETURN DUCT.

### BUILDING 2 - FLOOR PLAN MECH

3  
M101 1/8" = 1'-0"

#### DRAWING NOTES:

- 1) RETURN DIFFUSER, R-2, TO BE INSTALLED 7'-6" AFF.
- 2) LINE ALL EXPOSED SUPPLY DUCTWORK WITH 1" LINER.
- 3) RETURN DUCTWORK SHALL NOT BE INSULATED.
- 4) PROVIDE 2' CLEARANCE ON EACH SIDE OF WATER SOURCE HEAT PUMP, HP-12, PER MANUFACTURER'S INSTRUCTIONS.
- 5) EXPOSED DUCTWORK SHALL NOT BE PAINTED.
- 6) DO NOT INSTALL PIPING OR DUCTWORK OVER THE TELECOM ROOM.

#### TANKLESS WATER HEATER CALCULATIONS:

1) REQUIRED VOLUME OF ROOM:  
THE CALCULATIONS FOR THE TANKLESS WATER HEATERS (TWO PLANNED FOR INSTALLATION AND ONE ROUGH IN FOR FUTURE UNIT) ARE BASED ON UNITS WITH 9,500 BTUH INPUT GAS RATE.

$$\text{REQUIRED VOLUME} = \frac{\text{APPLIANCE INPUT RATING (BTUH)} \times 50 \text{ CU FT}}{1,000 \text{ BTUH}}$$

$$\text{REQUIRED VOLUME} = \frac{39,500 \text{ BTUH} / (50 \text{ CU FT})}{1,000 \text{ BTUH}} = 1,425 \text{ CU FT}$$

ACTUAL VOLUME OF MECHANICAL ROOM 40 IS 2,113 CU FT, THEREFORE THE ROOM VOLUME MEETS THE REQUIREMENTS OF THE 2006 IMC.

2) MECHANICAL COMBUSTION OF AIR SUPPLY:  
THE CALCULATIONS FOR THE TANKLESS WATER HEATERS (TWO PLANNED FOR INSTALLATION AND ONE ROUGH IN FOR FUTURE UNIT) ARE BASED ON UNITS WITH 9,500 BTUH INPUT GAS RATE.

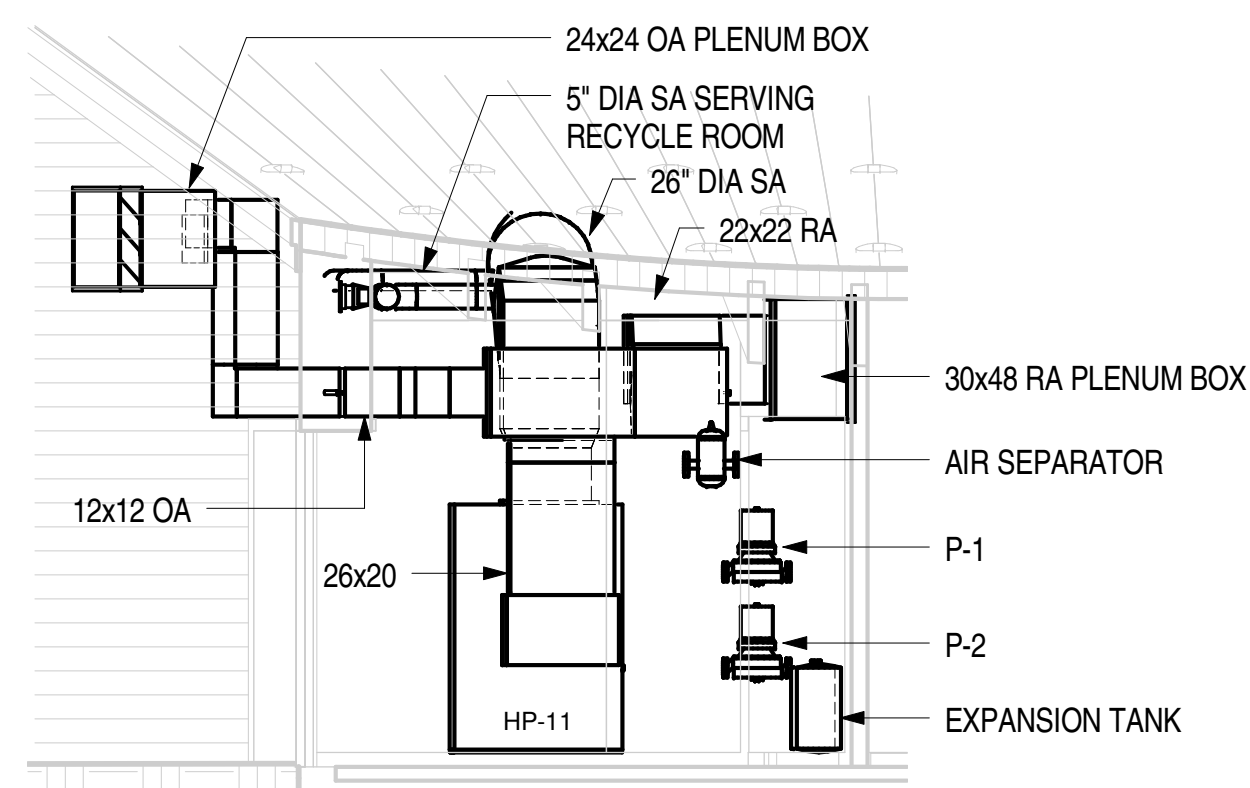
REQUIRED OUTSIDE AIR FLOW RATE = 0.35 CFM PER 1,000 BTUH OF TOTAL INPUT RATING OF ALL APPLIANCES LOCATED IN THE SPACE.

$$\text{REQUIRED OA FLOW RATE} = \left( \frac{0.35 \text{ CFM}}{1,000 \text{ BTUH}} \right) \times (9,500 \text{ BTUH} \times 3) = 9,975 \text{ CFM OF OA}$$

THE OUTSIDE AIR QUANTITY OF HP-10, WHICH SERVES THE BASEMENT OF BUILDING 1, SHALL BE 250 CFM. THE INCREASE IN OUTSIDE AIR COMBINES THE VENTILATION AIR REQUIREMENT WITH THE COMBUSTION AIR REQUIREMENT FOR THE TANKLESS WATER HEATERS. THE INCREASE IN OUTSIDE AIR MEETS THE REQUIREMENTS OF THE 2006 IFGC TO PROVIDE MECHANICAL COMBUSTION AIR SUPPLY.

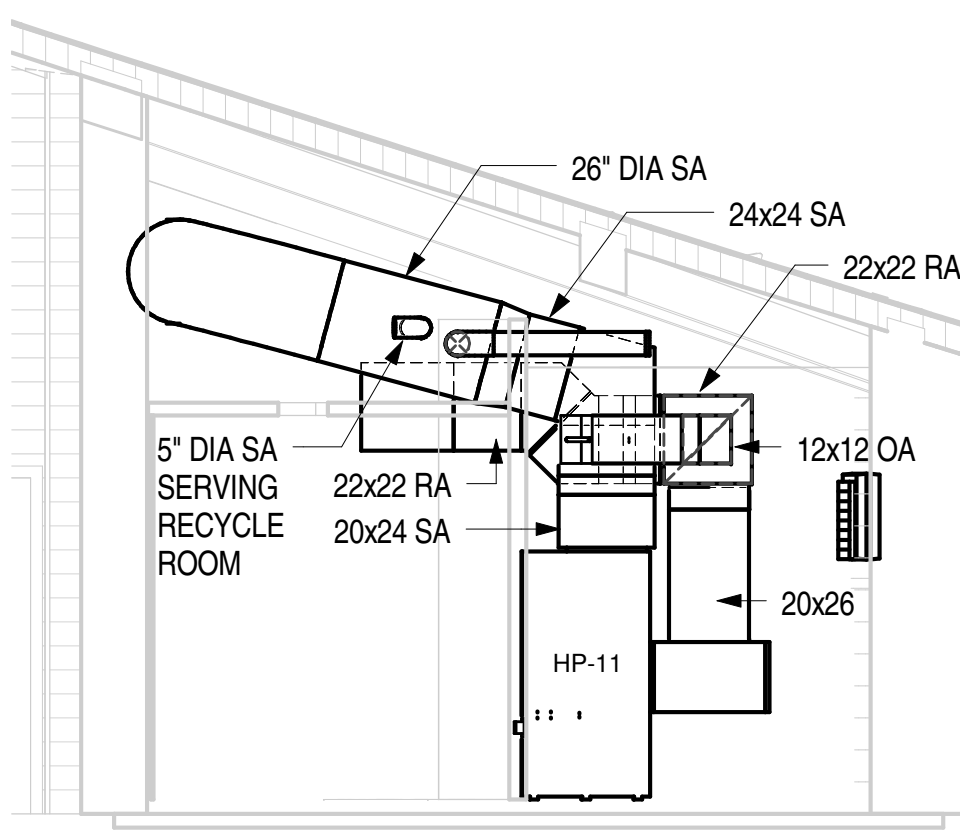
### BUILDING 1 - BASEMENT FLOOR PLAN MECH

1  
M101 1/8" = 1'-0"



### MECHANICAL ROOM 45 SECTION 2

2  
M101 1/4" = 1'-0"



### MECHANICAL ROOM 45 SECTION 1

1  
M101 1/4" = 1'-0"